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FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

LOWER POPLAR CREEK

ELGIN

COOK & KANE COUNTIES



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CITY OF ELGIN (SE CORNER)

COOK & KANE COUNTIES, ILLINOIS

FLOODPLAIN MANAGEMENT

RECONNAISSANCE STUDY

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US DEPARTMENT OF AGRICULTURE
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In cooperation with

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TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
STUDY AREA DESCRIPTION	2
NATURAL VALUES	4
FLOOD PROBLEMS	5
PROBLEM SUMMARY	7
EXISTING FLOODPLAIN MANAGEMENT	8
RECOMMENDATIONS	9
INVESTIGATION AND ANALYSIS	11
 VICINITY MAP	
FLOODPLAIN MAP	

CITY OF ELGIN
RECONNAISSANCE STUDY
INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flood problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Floodplain Management", and under Section 6 of Public Law 83-566. A plan of study was executed in October 1986 for reconnaissance studies for 4 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100 year floodplain from flood insurance studies when available. Average annual damages are estimated for the structures within the floodplain.

The study was conducted and the report provided to: 1) evaluate needs for additional future studies, 2) estimate average annual damages, 3) provide an updated estimate of the 100 year floodplain map, and 4) provide guidance and recommendations to the community for improved floodplain management.

STUDY AREA DESCRIPTION

The study area is the lower 1.6 miles of Poplar Creek in the City of Elgin, and unincorporated areas of Cook and Kane Counties, Illinois. Elgin, located in northeastern Illinois has a population of 63,798, according to the 1980 census.

The primary transportation facilities in the study area are US Highway #20, Illinois State Highway #25, Chicago and Northwestern Railroad, and the Chicago, Milwaukee, St. Paul and Pacific railroad. The Fox River at the confluence of Poplar Creek, is used by personal fishing boats, canoes, and pleasure craft boats.

The lower 1.6 miles of Poplar Creek is in the southeast corner of the City of Elgin and flows into the Fox River. The approximate drainage area of Poplar Creek Watershed is 39.8 square miles and is in the Upper Fox River Basin, hydrologic unit #07120006, subwatershed #120. The upper Fox River has a drainage area of approximately 624.7 square miles at Poplar Creek's confluence with the Fox River.

The corporate limits of Elgin in the study area includes the Bluff City Cemetery east of Poplar Creek, a residential area north and west of Poplar Creek, and some business and industrial areas along St. Charles Street (Route #25) and Raymond Street. The unincorporated area of Cook County in the study area includes the Bluff City Fen and the Poplar Creek quarries. The unincorporated area of Kane County in the study area includes a wetland, the Bluff Spring Fen; a woodland and grassland area with some small ponds; and a natural habitat area consisting of trees, grass, and brush.

The average annual rainfall is 33 inches. The March through October monthly rainfall averages 3.2 inches while November through February rainfall averages 1.8 inches per month. Snowfall averages 32 inches annually.

The soils in the Poplar Creek floodway study area in southeast Elgin are Sawmill silty clay loam and Muskego and Houghton mucks. These are nearly level, poorly drained to very poorly drained soils. They are not suited for urban uses, roads, sanitary facilities, or farming because of the periodic flooding, poor drainage, and high organic matter content. The soils in the floodplain fringes and upland areas consist of loams, silty clay loams, and gravelly loams on various slopes ranging from flat to steep because of the rolling terrain. To the east of the Poplar Creek floodway is the Bluff City Cemetery with soils like the nearly level, poorly drained Will silty clay loam; the moderately sloped, well drained Fox silt loam; the steeply sloped, well drained Lorenzo loam and the excessively drained Rodman soils. These soils have severe limitations for most uses but a cemetery is one of the better uses of this area. An area to the southeast of Poplar Creek is in gravel pits. The soils in the residential area north of Hammond Avenue consist of Fox silt loam on the moderately sloping areas and Drummer silty clay loam on the level areas. The Fox silt loam is well drained and is moderately suited for building site usage. The Drummer silty clay loam is a poorly drained soil with occasional flooding and a high water table making its use for building sites limited unless provided with an adequate drainage system and protection from flooding. The soils along Highway #25 and downstream but outside the floodway area generally consist of Fox and Dresden silt loam and Lorenzo loam. These soils are well drained on moderately sloping terrain. They are moderately suited for most uses with problems such as slope, shrink/swell potential and low strength that must be addressed during the planning and design stages.

This area of Elgin is served by the city water and sanitary sewer facilities. The Elgin Sewage Treatment Plant is just north of Poplar Creek's mouth along the Fox River. The floodwater and stormwater is handled by surface drainage primarily in the streets to a storm sewer that drains into the creek.

NATURAL VALUES

The area along Poplar Creek downstream of St. Charles Avenue (Route #25) borders factories, open marsh, floodplain land, and a few railroad bridge crossings. The open marsh is designated the Bluff Spring Fen and features an area of muck soils with deep open water and is located between the C.M. St. Paul & Pacific railroad track and Raymond Street. Much of the floodway area is in muck soils and is covered with trees and brush. The area along Poplar Creek upstream of St. Charles Avenue (Route #25) to Bluff City Boulevard is characterized by woodland and marshland of some scenic value. The Bluff City cemetery borders the channel to the east. It was established as a cemetery in 1889 and is still used and cared for today. An area from the Kane-Cook County line to the cemetery is preserved as the Bluff City Fen. Southeast of the Bluff City Fen is an area of inactive gravel pits called the Poplar Creek Quarries that are full of water. There are similar locations in the Chicago area where old excavations have been developed into residential areas or areas for recreational purposes such as fishing, boating, and swimming. The gravel pit area, Bluff City Fen, and other brushy tree-lined areas along this lower section of Poplar Creek have good scenic qualities, unique vegetation and provide good habitat for song birds, small mammals and fur bearers. There is an abandoned railroad grade crossing Poplar Creek at its junction with the Chicago and Northwestern Railway track and near the mouth of Poplar Creek. This abandoned railroad grade could become an extension of the Illinois Prairie Path located approximately 3 miles south in DuPage County.

FLOOD PROBLEMS

Flooding in the study area of SE Elgin is primarily from Poplar Creek. There are some low-lying buildings in a residential area north of Hammond Avenue in the vicinity of Liberty Street and Illinois Avenue that receive damages starting at approximately the 2 year frequency.

A 1973 contour map provided by the engineering division of the Elgin Department of Public Works revealed that the residential area north of Hammond Avenue would have flooding over approximately 3 times more land area than had been noted on previous floodplain maps. This was determined by using the flood profiles from previous studies and transferring those elevations to the 1973 contour map. The maps used in the previous studies did not have contour elevations in this particular area. The City of Elgin employees have been called out on numerous occasions to pump out basements in the area north of Hammond Avenue. This problem may not be completely caused by flooding, but floodwaters have been in this area.

A small dike has been constructed along the south side of Hammond Avenue in the vicinity of the storm sewer to prevent some of the more frequent floods along Poplar Creek from entering the storm drain. The dike also traps water on its upstream side once the area has been flooded.

In this reach of Poplar Creek the potential for future development is very limited because of the soils and the frequent flooding. The urban development of the metropolitan area of greater Chicago is spreading westward and the upper reaches of Poplar Creek will become more urbanized. In 1976 the Chicago Metropolitan River Basin floodwater management plan for Poplar Creek Watershed showed that approximately 40% of the watershed was developed in 1975 and projected that 65% would be developed in the year 2000.

Another watershed in the Chicago Metropolitan River Basin, the Lower Des Plaines Tributaries Watershed, had more than 45% of its natural agricultural land converted to urban land uses from 1964 to 1975. The 1976 Chicago River Basin plan for the Des Plaines River projected that the Des Plaines River watershed would be 62% developed in the year 2000. The 1985 PL-566 watershed work plan showed that the Lower Des Plaines Tributaries Watershed was 74% developed in 1980 or had already exceeded its projection for the year 2000. Similarly, Poplar Creek may have exceeded its projected land use conversion to urban uses and will be approaching the point of fully developed for urban land use by the year 2000. With upstream development there is an increase in runoff due to changing land use from rural agricultural to urban usage. The downstream area of Poplar Creek in southeast Elgin could be more severely damaged in the future than it is now.

The extreme flows recorded at the gauge on Poplar Creek near Villa Street approximately one half mile upstream from the study area indicate the maximum gauge height since 1951 has been equivalent to about the 10 year frequency elevation.

At the time of the site visitation there was some recent earth filling near the St. Charles Street bridge on the downstream side. There were trucks hauling fill to an area on the upstream side of St. Charles Street near the Chicago Milwaukee St. Paul and Pacific Railroad grade that is in or near the floodplain. Random filling of the floodplain should not be occurring without a permit.

PROBLEM SUMMARY

Estimated average annual damages to the southeast part of the City of Elgin caused by Poplar Creek from US Route #20 to the outlet at the Fox River are listed below:

<u>Type</u>	<u>Number</u>	<u>Total Value</u>	<u>Average Annual Damages</u>
Houses	62	\$2,046,000	\$21,000
Garages/sheds	44	107,000	1,300
Businesses	<u>1</u>	<u>50,000</u>	<u>1,500</u>
Subtotal	107	\$2,203,000	\$23,800

Total estimated average annual damages for southeast Elgin = \$23,800

Significant building damages do not occur until the 2 year frequency storm.

EXISTING FLOODPLAIN MANAGEMENT

The City of Elgin and Kane County have participated in the regular phase of the National Flood Insurance Program since March 1, 1982 and Cook County since April 15, 1981. The latest floodplain maps being used by these three governmental entities is Kane County, March 1, 1982; Cook County, December 4, 1984; and City of Elgin, April 17, 1984.

A two volume report for Poplar Creek Watershed Environmental Resources Inventory was prepared by Bauer Engineer, Inc, Chicago, Illinois, in October 1975. This report was prepared for the SCS in developing the Chicago Metropolitan Area River Basin Plan. The Poplar Creek Watershed portion of the River Basin Plan was completed in March, 1976 and included floodplain maps and profiles.

The flood insurance floodplain maps are the same as the 1976 River Basin map for this section of Poplar Creek. The map in this report is the same as those maps with the exception of the residential area north of Hammond Avenue. This area was changed by using a 1973 two foot contour map of that area provided by the Elgin engineering division of the Department of Public Works.

RECOMMENDATIONS

It is recommended that the City of Elgin continue to participate in the National Flood Insurance Program. A new map should be developed to reflect the floodplain boundary change in the residential area north of Hammond Avenue as shown in the floodplain map attached to this report.

With the upstream areas of Poplar Creek experiencing significant land use change from rural to urban land usage, ordinances governing control of increased stormwater discharges and sediment and erosion control should be enforced to prevent the increase of flood flows at the outlet of Poplar Creek.

The City of Elgin should continue to monitor any filling in the floodplain or near the floodplain to be assured that it is not causing higher flood stages in the flood damage area. The city should continue to regulate any development in the floodplain and preserve the floodway by using the state floodplain regulations and/or local zoning and building code ordinances.

The floodway delineated in previous studies show 4 houses in the floodway. These homes should be purchased and removed from the floodway (floodplain aquisition) or re-positioned to flood free areas (relocation). Future flood losses to the more flood prone buildings along Hammond Avenue, Illinois Street, Liberty Street, and St. Charles Street could be reduced by nonstructural measures such as floodplain aquisition, relocation, or floodproofing and by structural measures such as dikes or floodwalls.

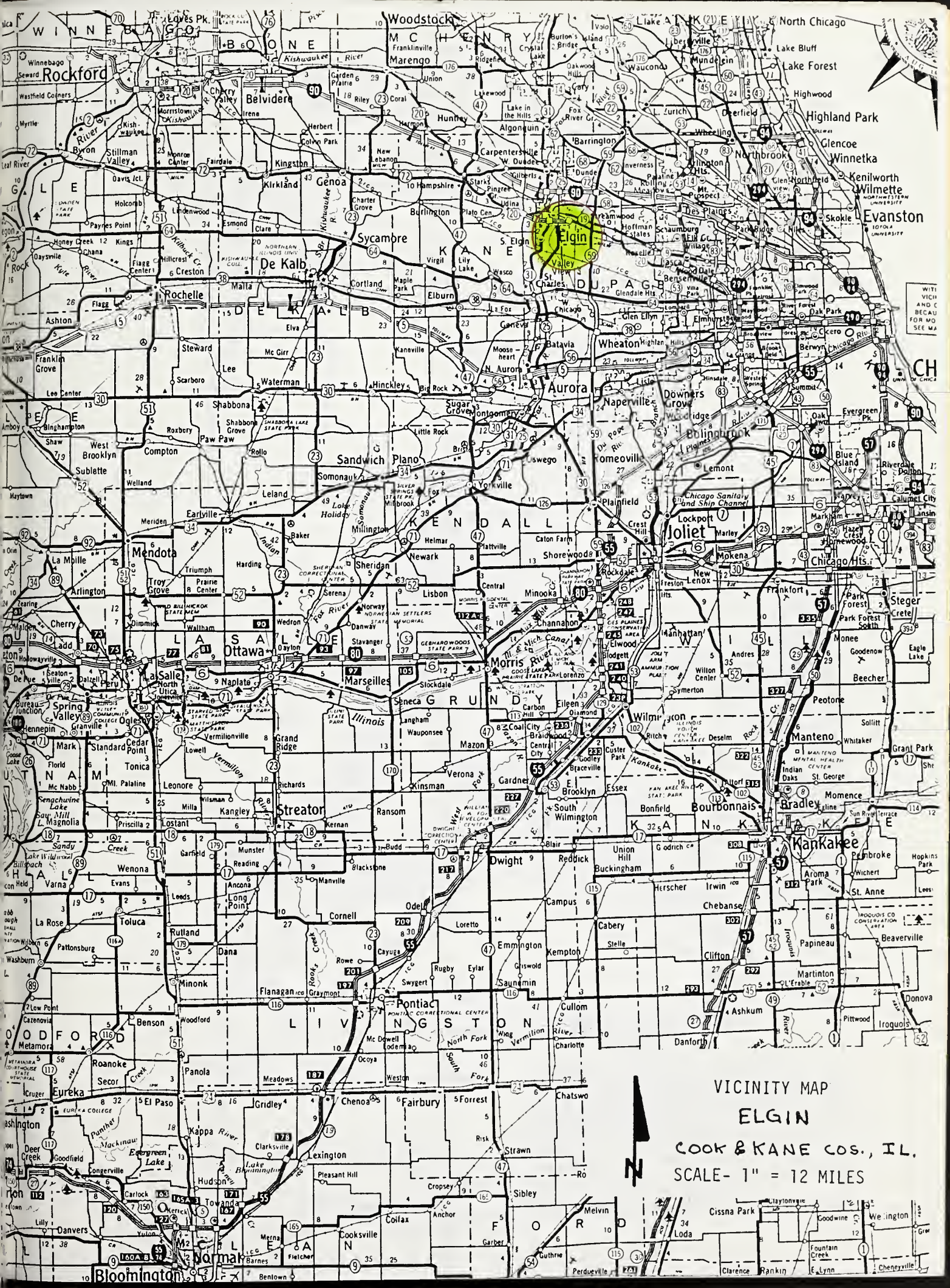
Floodproofing appears to be the most cost-effective means of reducing flood losses. Floodproofing consists of modifications of existing structures, their sites, and building contents to reduce the probability and adverse effects of water entry. Floodproofing measures such as blocking off low level entrances and windows; elevating the building or contents above the base flood elevation; installing one-way valves, standpipes, or overhead sewer systems; and strengthening walls and foundations are usually cost-effective. The property owner is responsible for the installation, operation, and maintenance of floodproofing measures. Generally, the installation of floodproofing measures requires a qualified contractor along with some technical assistance. Information on various floodproofing methods can be found in Local Assistance Series 3B Manual, "Protect Your Home From Flood Damage", and "Flooded Basements: A Homeowner's Guide", published by Illinois Department of Transportation, Division of Water Resources.

A low priority should be assigned for a future detailed floodplain management study in the southeast corner of Elgin.

INVESTIGATION AND ANALYSIS

No additional calculations, discharges, or profiles were made as a part of this study. The inventory of flooding and water problems were determined from a review of Poplar Creek Watershed Environmental Resource Inventory prepared in 1975; Chicago Metro Area River Basin Report for Poplar Creek prepared in 1976; Kane County Soil Survey, 1976; DuPage County and part of Cook County Soil Survey, 1976; a field review and interviews with local citizens. The floodway and flood boundary maps, flood insurance maps and reports, river basin floodplain maps and profiles, USGS surface water gauge records, along with interviews of local citizens were used to determine the 100 year floodplain. Aerial photographs were provided by the Division of Water Resources. A 1973 two foot contour map of the study was provided by the Elgin engineering division of the Department of Public Works. Damages were based on property value estimates during the field review, and the application of damage factors. These factors came from previous detailed floodplain management studies.

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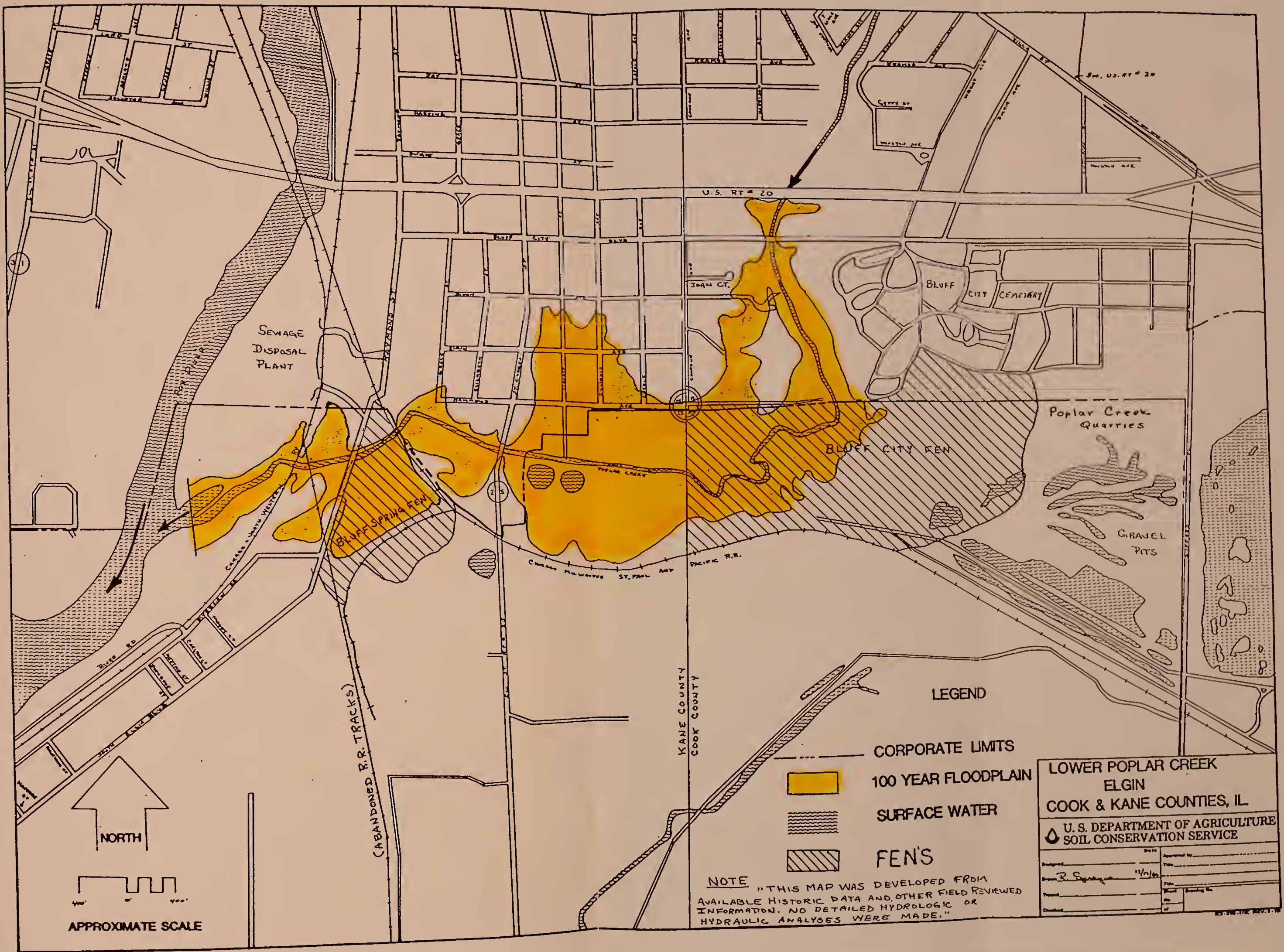


VICINITY MAP

ELGIN

COOK & KANE COS., IL.

SCALE - 1" = 12 MILES



LOWER POPLAR CREEK
ELGIN
COOK & KANE COUNTIES, IL

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed by	Date	Approved by
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NOTE "THIS MAP WAS DEVELOPED FROM AVAILABLE HISTORIC DATA AND OTHER FIELD REVIEWED INFORMATION. NO DETAILED HYDROLOGIC OR HYDRAULIC ANALYSES WERE MADE."

